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FOREST AREA AND TIMBER RESOURCE STATISTICS FOR THE BEAR RIVER AND WASATCH FRONT WORKING CIRCLES, UTAH, 1976-1977

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RESEARCH SUMMARY

Presents land area, commercial timberland area, timber inventory, and growth and mortality data based on Resources Evaluation standards.

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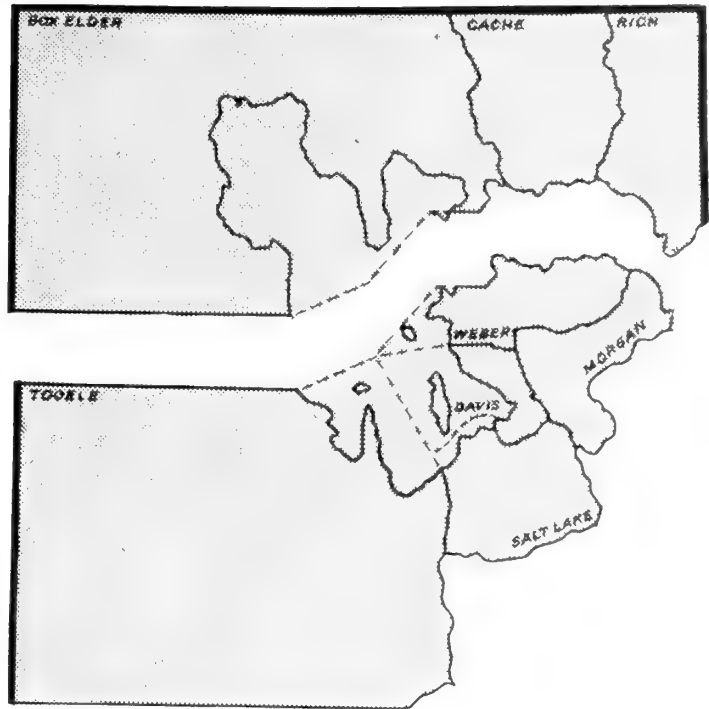
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BEAR RIVER AND

WASATCH FRONT



INTRODUCTION

This resource bulletin presents the principal findings of the second forest inventory of public and private lands, excluding National Forest ownership, in the eight county area making up the Bear River and Wasatch Front Working Circles (fig. 1; additional information for ownership by land classes is presented in figures 2-5). Fieldwork began in September 1976 and was completed in November 1977. This bulletin does not note changes and trends since the statewide inventory of 1961, nor does it contain estimates of timber removals. These items will be included in the State Analytical Report to be published in the near future.

The primary objective of Resources Evaluation, a continuing nationwide undertaking conducted by the USDA Forest Service, is to provide an assessment of the renewable resource situation on the Nation's forests and rangelands. Fundamental to the accomplishment of this objective are the periodic state-by-state resource inventories. Originally, Resources Evaluation--formerly Forest Survey--was authorized by the McSweeney-McNary Act of 1928. The current authorization is through the Renewable Resources Research Act of 1978.

The resource inventories for the Rocky Mountain States of Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, Wyoming, and western South Dakota are administered by the Intermountain Forest and Range Experiment Station, with headquarters in Ogden, Utah. These inventories provide information on the extent and condition of publicly and privately owned forest lands, volume of timber, and rates of timber growth and mortality. These data, when combined with similar information on Federal lands, provide a basis for the formulation of forest policies and programs and for the orderly development and use of the resources.

UTAH

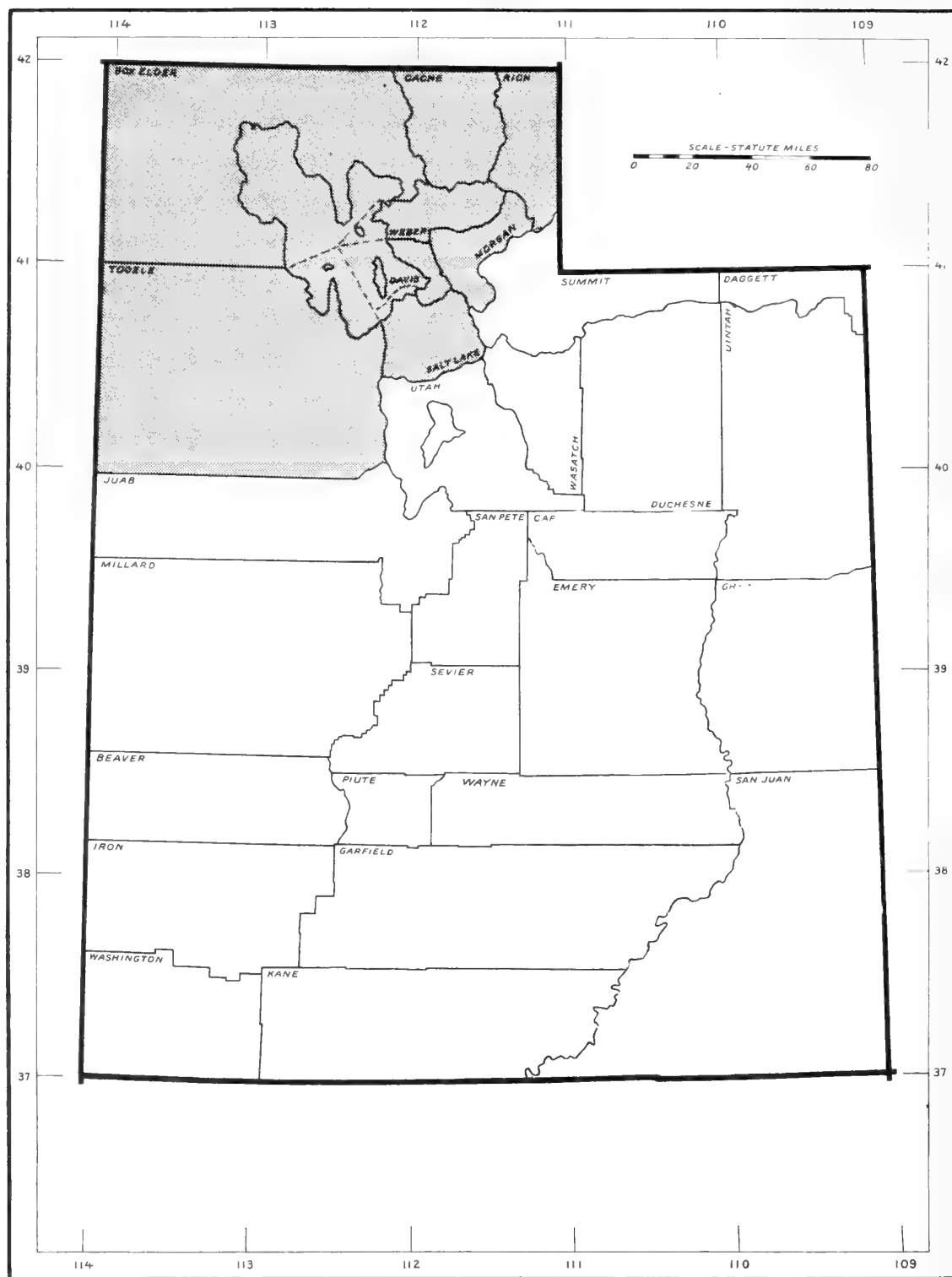


Figure 1.--Bear River and Wasatch Front Working Circles, Utah.

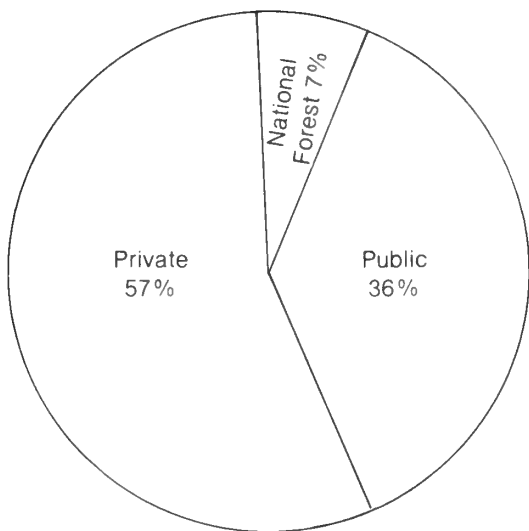


Figure 2.--Total land area for the Bear River and Wasatch Front Working Circles, by ownership.

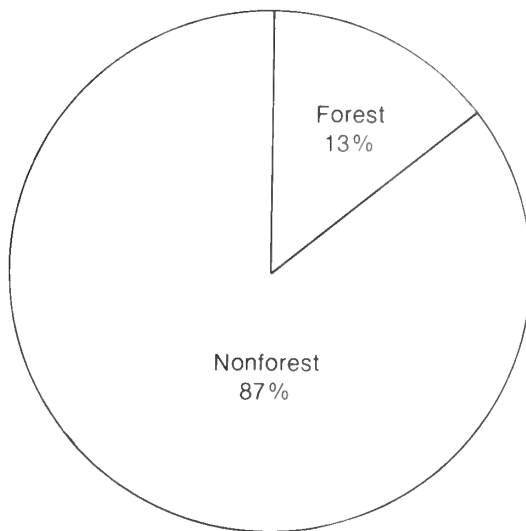


Figure 3.--Total land area for the Bear River and Wasatch Front Working Circles, by land class.

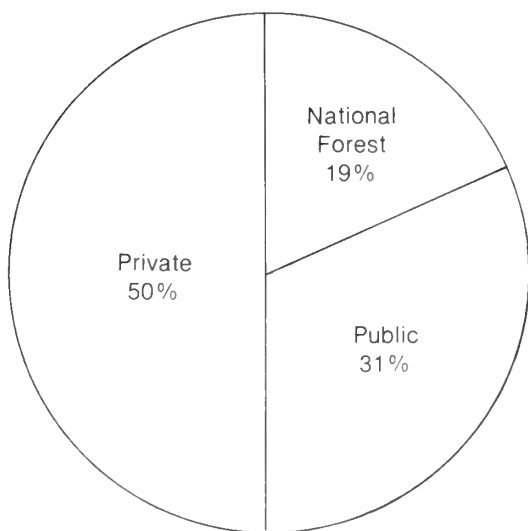


Figure 4.--Total area of forest land for the Bear River and Wasatch Front Working Circles, by ownership.

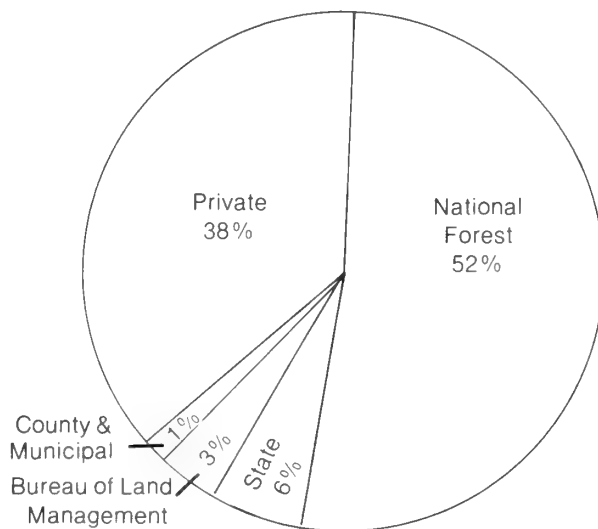


Figure 5.--Area of productive timberland for the Bear River and Wasatch Front Working Circles, by ownership.

HIGHLIGHTS

Area

- Forests occupy 1,162 thousand acres (470 thousand hectares), or 12 percent of the total public and private land area in the working circles.

- Of the forest land, 159 thousand acres (64 thousand hectares), almost 14 percent, is classified as commercial timberland.

- Private ownership accounts for 126 thousand acres (51 thousand hectares), nearly four-fifths of the commercial timberland (fig. 6).

- Fir-spruce, Douglas-fir, and aspen are the predominant forest types and occupy 95 percent of the commercial timberland. Lodgepole pine and cottonwood forest types cover the remaining area.

- Forest land, with the potential to produce from 50 to 84 cubic feet per acre per year, accounts for more than half of the commercial timberland, and nearly 80 percent of such land is privately owned.

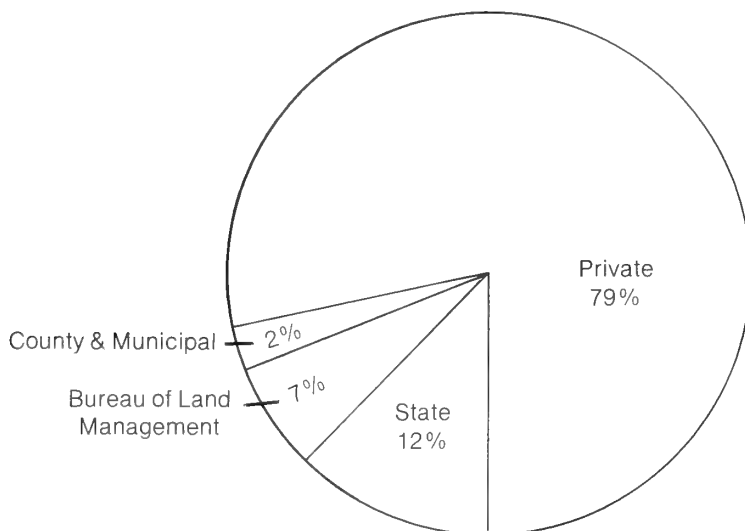


Figure 6.--Area of commercial timberland for the Bear River and Wasatch Front Working Circles, by ownership (excluding National Forest).

Inventory

- Growing stock volume amounts to 201 million cubic feet (5.7 million cubic meters) and sawtimber volume totals 656 million board feet.¹

- Rough, rotten, and salvable dead trees comprise 14 million cubic feet (405 thousand cubic meters), 7 percent of the total timber volume.

¹International 1/4-inch rule.

- The largest share of the total growing stock volume is made up of Douglas-fir (34 percent) and subalpine fir (27 percent). White fir, Engelmann spruce, limber pine, lodgepole pine, pinyon/juniper,² aspen, and cottonwood account for the remaining volume.

- Private owners control 77 percent of both the total growing stock and the sawtimber volume.

Growth and Mortality

- Net annual growth totals 4,076 thousand cubic feet (115 thousand cubic meters). Growth and mortality were not measured for pinyon and juniper trees.

- Seventy-eight percent of the total net growth is on private lands.

- The annual mortality of 1,540 thousand cubic feet (44 thousand cubic meters) offsets 27 percent of the gross annual growth.

HOW THE INVENTORY WAS CONDUCTED

The inventory was designed to provide reliable statistics primarily at the state and working circle levels. Procedures were as follows:

1. Initial area estimates were based on the classification of 40,400 sample points systematically placed on the latest aerial photographs available. The sample points were summarized and grouped into strata for subsequent field sampling. The photo points, adjusted to meet known land areas, were used to compute area expansion factors for the field stratum means.

2. Land classification and estimates of timber characteristics and volume were based on observations and measurements recorded at 117 ground sample locations. Sample trees were selected using a 10-point cluster which includes fixed plots (1/300 acre) for trees less than 5.0 inches d.b.h. and variable plots (40 BAF) for trees 5.0 inches d.b.h. or larger.

3. For most species, volume and defect were computed using equations developed for the Ashley National Forest. For other species, Kemp's equations were used.

4. All photo and field data were sent to Ogden, Utah, for editing and were punched onto cards and stored for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

DATA RELIABILITY

Individual cells within tables should be used with caution. Some are based on very small sample sizes and so result in high sampling errors. The standard error percents shown in tables 1 and 2 were calculated at the 67 percent confidence level.

²Although pinyon/juniper usually occurs on unproductive forest land, when it occurs in mixtures with other species on productive sites, it is reported in the commercial timberland statistics.

Table 1.--Area of forest land and percent standard error for the Bear River and Wasatch Front Working Circles, 1977

Item	Softwood types		Hardwood types		All types	
	Percent		Percent		Percent	
	Acres	standard error	Acres	standard error	Acres	standard error
	:	:	:	:	:	:
Commercial timberland	98,115	10.9	60,715	18.9	158,830	7.9
Other forest land:						
Unproductive nonreserved	534,576	1.6	455,721	2.8	990,297	1.5

Table 2.--Net volume, net annual growth, and annual mortality of growing stock and sawtimber on commercial timberland, with percent standard error for the Bear River and Wasatch Front Working Circles, 1977

Item	Softwoods		Hardwoods		All species	
	Percent		Percent		Percent	
	Volume	standard error	Volume	standard error	Volume	standard error
	:	:	:	:	:	:
Net volume:						
Growing stock (M cubic feet)	176,219	11.9	25,074	23.7	201,293	10.8
Sawtimber (M board feet ¹)	642,064	12.3	13,457	48.8	655,521	12.1
Net annual growth:						
Growing stock (cubic feet)	2,803,836	21.2	1,271,879	30.5	4,075,715	17.8
Sawtimber (board feet ¹)	13,277,412	21.7	426,932	53.0	13,704,344	21.1
Annual mortality:						
Growing stock (cubic feet)	1,283,515	35.4	256,655	50.1	1,540,170	31.1
Sawtimber (board feet ¹)	4,544,500	39.1	56,345	70.7	4,600,845	38.8

¹International 1/4-inch rule.

TERMINOLOGY AND DATA TABLES

The following section contains definitions that are relevant to the timber resource data presented in this resource bulletin. Forest area and timber resource data for the Bear River and Wasatch Front Working Circles, Utah, are displayed in tables 3 through 23.

TERMINOLOGY

Land

Bureau of the Census.--Area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains; streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area. Includes noncensus water. See definition below.

Water

Census water.--As defined by the Bureau of the Census, streams, sloughs, estuaries, and canals more than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds more than 40 acres in area.

Noncensus water.--The same as defined by the Bureau of the Census, except minimum width of streams, sloughs, estuaries, and canals is 120 feet and minimum size of lakes, reservoirs, and ponds is 1 acre.

Land Use Classes

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Commercial timberland.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Areas qualifying have the capability of producing in excess of 20 cubic feet per acre per year of industrial wood under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future.)

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial timberland, but withdrawn from timber utilization through statute, administrative designation, or exclusive use for Christmas tree production.

Other forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under management, because of adverse site conditions; includes both reserved and nonreserved forest land.

Nonforest land.--Land that has never supported forests and lands formerly forested where use for timber management is precluded by development for other uses.

Public Ownership Classes

National Forest lands.--Federal lands legally designated as National Forest or purchase units and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Bureau of Land Management lands.--Federal lands administered by the Bureau of Land Management.

Indian lands.--Tribal lands held in fee by the Federal Government, but administered for Indian tribal groups and Indian trust allotments.

State lands.--Lands owned by States, or lands leased to these governmental units for 50 years or more.

County and municipal lands.--Lands owned by counties and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Private Ownership Classes

Forest industry lands.--Lands owned by companies or individuals operating wood-processing plants.

Farmer-owned lands.--Lands owned by farm operators. (These exclude lands leased by farm operators from such nonfarm owners as railroad companies and States.)

Miscellaneous Federal lands.--Federal lands other than the following: (1) National Forest lands; (2) lands administered by the Bureau of Land Management; and (3) Indian lands.

Other private lands.--Privately owned lands other than forest industry and farmer-owned lands.

Forest Type and Tree Species

Forest types.--A classification of forest land based upon the species forming a plurality of live-tree stocking.

Forest trees.--Woody plants having a well-developed stem and usually more than 12 feet in height at maturity.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products.

Softwoods.--Coniferous trees, usually evergreen, having needles or scalelike leaves.

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Area Condition Classes

Stocking.--Stocking is an effort to express the extent to which growing space is effectively utilized by present or potential growing stock trees of commercial species. "Percent of stocking" is synonymous with "percentage of growing space occupied" and mean ratio of actual stocking to full stocking for comparable sites and stands. Basal area is used as a basis for measuring stocking.

"Stocking percentages" express current area occupancy in relation to specified standards for full stocking based on number, size, and spacing of trees considered necessary to fully utilize the forest land.

Full utilization of the site is assumed to occur over a range of basal area. As an interim guide, 60 percent of the normal yield table values has been used to establish the lower limit of this range which represents full-site occupancy. This is called 100-percent stocking. The upper limit of full stocking has been set at 132 percent. Sites with less than 100-percent stocking represent understocking with less than full-site occupancy. Overstocking is characterized by sites with over 133 percent stocking.

Class 10.--Areas fully stocked (100 to 132 percent) with desirable trees and not overstocked (133 percent or more).

Class 20.--Areas fully stocked with desirable trees, but overstocked with all live trees.

Class 30.--Areas medium to fully stocked (60 to 99 percent) with desirable trees and with less than 30 percent of the area controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

Class 40.--Areas medium to fully stocked with desirable trees and with 30 percent or more of the area controlled by other trees and/or conditions that ordinarily prevent occupancy by desirable trees.

Class 50.--Areas poorly stocked (16.7 to 59 percent) with desirable trees, but fully stocked with growing stock trees.

Class 60.--Areas poorly stocked with desirable trees, but with medium to full stocking of growing stock trees.

Class 70.--Areas nonstocked (less than 16.7 percent) or poorly stocked with desirable trees, and poorly stocked with growing stock trees.

Class 80.--Low-risk old-growth stands.

Class 90.--High-risk old-growth stands.

Nonstocked.--Areas less than 16.7 percent stocked with growing stock trees.

Class of Timber

Growing stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees. (Excludes rough, rotten, and dead trees.)

Desirable trees.--Growing stock trees (a) having no serious defect in quality limiting present or prospective use for timber products; (b) of relatively high vigor; and (c) containing no pathogens that may result in death or serious deterioration before rotation age.

Acceptable trees.--Growing stock trees that meet specified standards of size and quality, but do not qualify as desirable trees.

Rough trees.--(1) Live trees that do not contain at least one 12-foot saw log or two noncontiguous saw logs, each 8 feet long or longer, now or prospectively, and/or do not meet Rocky Mountain Regional specifications for freedom from defect primarily because of roughness or poor form; (2) all live trees of noncommercial species.

Rotten trees.--Live trees that do not contain at least one 12-foot saw log or two noncontiguous saw logs, each 8 feet long or longer, now or prospectively, and/or do not meet Rocky Mountain Regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent of the cull volume (cubic-foot basis) in a tree is rotten.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Rocky Mountain Regional standards.

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top. A 1-foot stump is used.

Upper-stem portion.--That part of the bole of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs, whichever occurs first.

Tree Size Classes

Seedlings.--Live trees less than 1.0 inch in diameter at breast height.

Saplings.--Trees 1.0 to 4.9 inches in diameter at breast height.

Poletimber trees.--Trees at least 5.0 inches in d.b.h., but smaller than sawtimber size.

Sawtimber trees.--Trees exceeding poletimber size. In the Intermountain States, the minimum d.b.h. for softwood sawtimber is 9.0 inches and for hardwood, 11.0 inches.

Volume

Cull volume.--Portions of a tree's volume that are not usable for industrial wood products because of rot, form, or other defect.

Net volume.--Gross volume less deductions for cull.

Growing stock volume.--Net volume in cubic feet of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) outside bark. Net volume equals gross volume less deduction for rot and missing bole sections.

Sawtimber volume.--Net volume in board feet of sawtimber trees of commercial species. Net volume equals gross volume less deduction for rot, sweep, crook, and other defects that affect use for lumber.

Growth and Mortality

Net annual growth.--The increase in net growing stock volume of a specified size class for a specific year. (Components of net annual growth include the increment in net volume of trees at the beginning of the specific year surviving to its end, plus net volume of trees reaching the size class during the year, minus the net volume of trees that died during the year, minus the net volume of trees that became rough or rotten trees during the year.)

Mortality.--Number or sound-wood volume of growing stock trees dying from natural causes during a specified period, usually annually.

Site

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood.

Site classifications are based upon the mean net annual growth of growing stock (not including thinnings or mortality loss) attainable at culmination of mean net annual growth over age. Height-age relationships are usually used as indicators of the specified volume-site class.

Stand-Size Classes

Sawtimber stands.--Stands at least 16.7 percent stocked with growing stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing stock trees in which half or more of this stocking is in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing stock trees in which more than half of the stocking is saplings and/or seedlings.

Nonstocked land.--Commercial timberland less than 16.7 percent stocked with growing stock trees.

Table 3.--*Total land and water area in the Bear River and Wasatch Front Working Circles by ownership class, 1977*

Ownership class	Acres	Hectares
National Forest	786,167	318,152
Bureau of Land Management	3,173,581	1,284,308
Indian	19,132	7,742
Miscellaneous Federal	68,376	27,671
State	569,773	230,580
County and municipal	26,584	10,758
Private	6,216,419	2,515,706
Total land area	10,860,032	4,394,917
Census water	1,295,360	524,216
Gross area ¹	12,155,392	4,919,133

¹U.S. Bureau of the Census, land and water area of the United States, 1970.

Table 4.--*Total land area in the Bear River and Wasatch Front Working Circles by major land class and ownership class, 1977*

Land class	Ownership class			
	Public		Private	
	Acres	Hectares	Acres	Hectares
Commercial timberland	32,684	13,227	126,146	51,049
Productive reserved	0	0	0	0
Other forest land:				
Unproductive reserved	13,208	5,345	0	0
Unproductive nonreserved	398,488	161,263	591,809	239,498
Total forest land	444,380	179,835	717,955	290,547
Nonforest land	3,413,066	1,381,224	5,498,464	2,225,159
Total land area	3,857,446	1,561,059	6,216,419	2,515,706

Table 5.--Area of commercial timberland in the Bear River and Wasatch Front Working Circles by forest type, stand-size class, and site class, 1977

Forest type and stand-size class	Site class				All classes
	120+	85-119	50-84	20-49	
- - - - - Acres - - - - -					
Douglas-fir:					
Sawtimber	--	2,779	16,799	17,183	36,761
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	2,755	--	--	2,755
Total	--	5,534	16,799	17,183	39,516
Fir-spruce:					
Sawtimber	--	8,128	30,608	11,314	50,050
Poletimber	--	--	--	2,878	2,878
Sapling and seedling	--	--	2,892	--	2,892
Nonstocked	--	--	--	--	--
Total	--	8,128	33,500	14,192	55,820
Lodgepole pine:					
Sawtimber	--	--	--	2,779	2,779
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	--	2,779	2,779
Aspen:					
Sawtimber	--	--	5,602	--	5,602
Poletimber	--	--	16,779	11,078	27,857
Sapling and seedling	--	--	8,118	13,775	21,893
Nonstocked	--	--	--	--	--
Total	--	--	30,499	24,853	55,352
Cottonwood:					
Sawtimber	--	--	--	5,363	5,363
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	--	5,363	5,363
All types:					
Sawtimber	--	10,907	53,009	36,639	100,555
Poletimber	--	--	16,779	13,956	30,735
Sapling and seedling	--	--	11,010	13,775	24,785
Nonstocked	--	2,755	--	-	2,755
Total	--	13,662	80,798	64,370	158,830

Table 6.--Area of publicly owned commercial timberland in the Bear River and Wasatch Front Working Circles by forest type, stand-size class, and site class, 1977

Forest type and stand-size class	:	Site class				:	All			
	:	120+	:	85-119	:	50-84	:	20-49	:	classes
- - - - - Acres - - - - -										
Douglas-fir:										
Sawtimber	--		747		3,911		4,085		8,743	
Poletimber	--		--		--		--		--	
Sapling and seedling	--		--		--		--		--	
Nonstocked	--		545		--		--		545	
Total	--		1,292		3,911		4,085		9,288	
Fir-spruce:										
Sawtimber	--		1,886		7,513		3,026		12,425	
Poletimber	--		--		--		765		765	
Sapling and seedling	--		--		276		--		276	
Nonstocked	--		--		--		--		--	
Total	--		1,886		7,789		3,791		13,466	
Lodgepole pine:										
Sawtimber	--		--		--		747		747	
Poletimber	--		--		--		--		--	
Sapling and seedling	--		--		--		--		--	
Nonstocked	--		--		--		--		--	
Total	--		--		--		747		747	
Aspen:										
Sawtimber	--		--		1,064		--		1,064	
Poletimber	--		--		2,325		1,243		3,568	
Sapling and seedling	--		--		1,194		2,707		3,901	
Nonstocked	--		--		--		--		--	
Total	--		--		4,583		3,950		8,533	
Cottonwood:										
Sawtimber	--		--		--		650		650	
Poletimber	--		--		--		--		--	
Sapling and seedling	--		--		--		--		--	
Nonstocked	--		--		--		--		--	
Total	--		--		--		650		650	
All types:										
Sawtimber	--		2,633		12,488		8,508		23,629	
Poletimber	--		--		2,325		2,008		4,333	
Sapling and seedling	--		--		1,470		2,707		4,177	
Nonstocked	--		545		--		--		545	
Total	--		3,178		16,283		13,223		32,684	

Table 7.--Area of privately owned commercial timberland in the Bear River and Wasatch Front Working Circles by forest type, stand-size class, and site class, 1977

Forest type and stand-size class	Site class				All classes
	120+	85-119	50-84	20-49	
- - - - - Acres - - - - -					
Douglas-fir:					
Sawtimber	--	2,032	12,888	13,098	28,018
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	2,210	--	--	2,210
Total	--	4,242	12,888	13,098	30,228
Fir-spruce:					
Sawtimber	--	6,242	23,095	8,288	37,625
Poletimber	--	--	--	2,113	2,113
Sapling and seedling	--	--	2,616	--	2,616
Nonstocked	--	--	--	--	--
Total	--	6,242	25,711	10,401	42,354
Lodgepole pine:					
Sawtimber	--	--	--	2,032	2,032
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	--	2,032	2,032
Aspen:					
Sawtimber	--	--	4,538	--	4,538
Poletimber	--	--	14,454	9,835	24,289
Sapling and seedling	--	--	6,924	11,068	17,992
Nonstocked	--	--	--	--	--
Total	--	--	25,916	20,903	46,819
Cottonwood:					
Sawtimber	--	--	--	4,713	4,713
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	--	4,713	4,713
All types:					
Sawtimber	--	8,274	40,521	28,131	76,926
Poletimber	--	--	14,454	11,948	26,402
Sapling and seedling	--	--	9,540	11,068	20,608
Nonstocked	--	2,210	--	--	2,210
Total	--	10,484	64,515	51,147	126,146

Table 8.--Area of commercial timberland in the Bear River and Wasatch Front Working Circles by stand volume and ownership class, 1977

Stand volume per acre ¹	Ownership class		
	Public	Private	Public and private
	----- Acres -----		
Less than 1,500 board feet	9,317	49,013	58,330
1,500 to 4,999 board feet	8,972	33,104	42,076
5,000 board feet or more	14,395	44,029	58,424
All classes	32,684	126,146	158,830

¹International 1/4-inch rule.

Table 9.--Area of commercial timberland in the Bear River and Wasatch Front Working Circles by forest type and area condition class, 1977

Forest type	Area condition class										All classes
	10	20	30	40	50	60	70	80	90	Nonstocked	
	----- Acres -----										----- Hectares -----
Douglas-fir	--	--	--	--	--	8,549	11,413	8,511	8,288	2,755	39,516
Fir-spruce	2,779	--	--	7,721	2,878	17,084	5,756	8,387	11,215	--	55,820
Lodgepole pine	--	--	--	--	--	2,779	--	--	--	--	2,779
Aspen	--	4,942	--	24,740	11,362	5,770	8,538	--	--	--	55,352
Cottonwood	--	--	--	--	--	--	5,363	--	--	--	5,363
All types	2,779	4,942	--	32,461	14,240	34,182	31,070	16,898	19,503	2,755	158,830
											64,276

Table 10.--Area of productive reserved and other forest land in the Bear River and Wasatch Front
Working Circles by land class, ownership class, and forest type, 1977

Land class	Forest type							All types
	Douglas-fir	Limber pine	Fir-spruce	Pinyon-juniper	Aspen	Mixed hardwoods		
Productive reserved area:								
Public	--	--	--	--	--	--	--	--
Private	0	0	0	0	0	0	0	0
Other forest land area:								
Unproductive nonreserved:								
Public	544	765	766	319,750	7,516	69,147	398,488	161,263
Private	2,210	2,112	2,112	206,317	56,821	322,237	591,809	239,498
Unproductive reserved:								
Public	--	--	--	13,208	--	--	13,208	5,345
Private	0	0	0	0	0	0	0	0
All areas:								
Public	544	765	766	332,958	7,516	69,147	411,696	166,608
Private	2,210	2,112	2,112	206,317	56,821	322,237	591,809	239,498
Total acres	2,754	2,877	2,878	539,275	64,337	391,384	1,003,505	--
Total hectares	1,115	1,164	1,165	218,238	26,036	158,388	--	406,106

Table 11.--Number of growing stock trees on commercial timberland in the Bear River and Wasatch Front
Working Circles by species and diameter class, 1977

Species	Diameter class (inches at breast height)																All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0-30.0+		
Thousand trees																	
Douglas-fir	594	754	520	889	615	518	294	270	156	87	84	61	24	3	38	4,907	
Lodgepole pine	--	--	--	26	--	30	24	18	--	20	--	--	--	--	--	118	
Limber pine	83	--	--	--	56	55	31	8	38	15	9	11	6	3	--	315	
Subalpine fir	2,086	1,946	2,055	1,108	658	495	213	191	154	62	38	22	12	10	4	9,054	
White fir	1,194	592	739	544	295	127	144	79	99	27	41	14	9	3	7	3,914	
Engelmann spruce	--	165	267	186	163	72	74	34	39	27	13	11	6	2	4	1,063	
Pinyon/juniper	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	26	
Total softwoods	3,957	3,457	3,581	2,753	1,813	1,297	780	600	486	238	185	119	57	21	53	19,397	
Aspen	13,098	6,113	5,089	2,185	917	144	75	16	--	--	--	--	--	--	--	27,637	
Cottonwood	--	74	--	24	71	39	30	17	--	9	4	--	--	--	--	268	
Total hardwoods	13,098	6,187	5,089	2,209	988	183	105	33	--	9	4	--	--	--	--	27,905	
All species	17,055	9,644	8,670	4,962	2,801	1,480	885	633	486	247	189	119	57	21	53	47,302	

Table 12.--Number of cull and salvageable dead trees on commercial timberland in the Bear River and Wasatch Front Working Circles by ownership class, and softwoods and hardwoods, 1977

Ownership class and species group	Sound		Cull trees		Total		Salvageable	
	Thousand trees		Thousand trees		Thousand trees		Thousand trees	
Public:								
Softwoods	533		133		666		143	
Hardwoods	296		179		475		134	
Total	829		312		1,141		277	
Private:								
Softwoods	1,671		443		2,114		447	
Hardwoods	1,329		990		2,319		786	
Total	3,000		1,433		4,433		1,233	
Public and private:								
Softwoods	2,204		576		2,780		590	
Hardwoods	1,625		1,169		2,794		920	
Total	3,829		1,745		5,574		1,510	

Table 13.--Net volume of growing stock on commercial timberland in the Bear River and Wasatch Front Working Circles by ownership class, forest type, and stand-size class, 1977

Ownership class:	Forest type	Stand-size class				All classes										
		Sawtimber	Poletimber	Sapling/seedling	Nonstocked											
Public:		-	-	-	-	-	-	-	Thousand cubic feet	-	-	-	-	-	Thousand cubic meters	
	Douglas-fir	14,249	--	--	151	14,400	407									
	Fir-spruce	24,924	455	99	--	25,478	722									
	Lodgepole pine	755	--	--	--	755	22									
	Aspen	1,176	2,406	1,214	--	4,796	136									
	Cottonwood	296	--	--	--	296	8									
	All types	41,400	2,861	1,313	151	45,725	1,295									
Private:	Douglas-fir	45,700	--	--	613	46,313	1,312									
	Fir-spruce	76,567	1,254	943	--	78,764	2,230									
	Lodgepole pine	2,054	--	--	--	2,054	58									
	Aspen	3,849	16,386	5,978	--	26,213	742									
	Cottonwood	2,224	--	--	--	2,224	63									
	All types	130,394	17,640	6,921	613	155,568	4,405									
Public and private:	Douglas-fir	59,949	--	--	764	60,713	1,719									
	Fir-spruce	101,491	1,709	1,042	--	104,242	2,952									
	Lodgepole pine	2,809	--	--	--	2,809	80									
	Aspen	5,025	18,792	7,192	--	31,009	878									
	Cottonwood	2,520	--	--	--	2,520	71									
	All types	171,794	20,501	8,234	764	201,293	5,700									

Table 14.--*Net volume of sawtimber on commercial timberland in the Bear River and Wasatch Front Working Circles by ownership class, forest type, and stand-size class, 1977*

Ownership class:	Forest type	Stand-size class				All classes
		Sawtimber	Poletimber	Sapling/seedling	Nonstocked	
		Thousand board feet ¹				
Public:						
	Douglas-fir	52,936	--	--	90	53,026
	Fir-spruce	90,611	997	136	--	91,744
	Lodgepole pine	2,980	--	--	--	2,980
	Aspen	2,233	2,079	2,183	--	6,495
	Cottonwood	1,106	--	--	--	1,106
	All types	149,866	3,076	2,319	90	155,351
Private:						
	Douglas-fir	170,696	--	--	367	171,063
	Fir-spruce	275,072	2,752	1,287	--	279,111
	Lodgepole pine	8,103	--	--	--	8,103
	Aspen	7,776	15,375	10,675	--	33,826
	Cottonwood	8,067	--	--	--	8,067
	All types	469,714	18,127	11,962	367	500,170
Public and private:						
	Douglas-fir	223,632	--	--	457	224,089
	Fir-spruce	365,683	3,749	1,423	--	370,855
	Lodgepole pine	11,083	--	--	--	11,083
	Aspen	10,009	17,454	12,858	--	40,321
	Cottonwood	9,173	--	--	--	9,173
	All types	619,580	21,203	14,281	457	655,521

¹International 1/4-inch rule.

Table 15.--Net volume of growing stock on commercial timberland in the Bear River and Wasatch Front
Working Circles by species and diameter class, 1977

Species	Diameter class (inches at breast height)																All classes
	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 24.9	25.0- 26.9	27.0- 28.9	29.0- 30.9	31.0- 32.9	33.0- 34.9	35.0- 36.9	
Thousand cubic feet																	
Douglas-fir	1,028	4,797	6,920	8,585	7,021	8,637	6,245	4,612	6,635	5,263	2,595	197	6,718				69,253
Lodgepole pine	--	177	--	392	410	453	--	1,044	--	--	--	--	--	--	--	--	2,476
Limber pine	--	--	652	842	849	195	1,294	708	382	828	528	322	--	--	--	--	6,600
Subalpine fir	4,311	6,197	6,602	7,712	5,355	6,603	6,258	3,450	2,671	1,850	931	1,151	497	53,588			53,588
White fir	6,216	5,378	3,581	2,022	3,162	2,006	3,356	1,027	1,935	725	487	208	740	30,843			30,843
Engelmann spruce	623	795	1,560	1,162	1,653	1,081	1,410	1,526	763	1,050	797	349	688	13,457			13,457
Pinyon/juniper	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	2
Total softwoods	12,178	17,344	19,317	20,715	18,450	18,975	18,563	12,367	12,386	9,716	5,338	2,227	8,643				176,219
Aspen	7,201	6,821	5,507	1,417	1,048	309	--	--	--	--	--	--	--	--	--	--	22,303
Cottonwood	--	153	515	549	540	468	--	422	124	--	--	--	--	--	--	--	2,771
Total hardwoods	7,201	6,974	6,022	1,966	1,588	777	--	422	124	--	--	--	--	--	--	--	25,074
All species	19,379	24,318	25,339	22,681	20,038	19,752	18,563	12,789	12,510	9,716	5,338	2,227	8,643				201,293

Table 16.--Net volume of sawtimber on commercial timberland in the Bear River and Wasatch Front
Working Circles by species and diameter class, 1977

Species	Diameter class (inches at breast height)																All classes
	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 24.9	25.0- 26.9	27.0- 28.9	29.0- 30.9	31.0- 32.9	33.0- 34.9	35.0- 36.9	37.0- 38.9	39.0- 40.9	
Thousand board feet, International 1/4-inch rule																	
Douglas-fir	26,862	35,404	30,552	39,189	29,220	22,204	32,753	26,404	13,222	1,017	35,621						292,448
Lodgepole pine	--	1,732	1,880	2,162	--	5,309	--	--	--	--	--	--	--	--	--	--	11,083
Limber pine	2,687	3,766	3,930	950	6,441	3,605	1,998	4,311	2,802	1,705	--	--	--	--	--	--	32,195
Subalpine fir	23,685	29,604	21,788	27,944	27,183	15,387	12,137	8,508	4,363	5,450	2,387	178,436					178,436
White fir	8,079	6,633	12,871	8,464	14,869	4,500	8,333	3,089	2,071	914	3,381	73,204					73,204
Engelmann spruce	5,892	4,727	7,143	4,827	6,604	7,239	3,749	5,184	3,967	1,773	3,587	54,692					54,692
Pinyon/juniper	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6
Total softwoods	67,211	81,866	78,164	83,536	84,317	58,244	58,970	47,496	26,425	10,859	44,976						642,064
Aspen	XXXXX	1,531	1,196	366	--	--	--	--	--	--	--	--	--	--	--	--	3,093
Cottonwood	XXXXX	2,799	2,711	2,321	--	1,972	561	--	--	--	--	--	--	--	--	--	10,364
Total hardwoods	XXXXX	4,330	3,907	2,687	--	1,972	561	--	--	--	--	--	--	--	--	--	13,457
All species	67,211	86,196	82,071	86,223	84,317	60,216	59,531	47,496	26,425	10,859	44,976						655,521

Table 17.--Net volume of growing stock and sawtimber on commercial timberland in the Bear River and Wasatch Front Working Circles by ownership class and species, 1977

Ownership class:	Species									
	Douglas-fir:	Lodgepole: pine	Limber: pine	Subalpine: fir	White fir:	Engelmann: spruce	Pinyon: juniper	Total: softwoods:	Aspen: hardwoods:	Total: All species
GROWING STOCK										
Thousand cubic feet										
Public	16,232	666	1,634	13,436	6,942	3,017	(¹)	41,927	3,464	3,798
Private	53,021	1,810	4,966	40,152	23,901	10,440	2	134,292	18,839	21,276
Total	69,253	2,476	6,600	53,588	30,843	13,457	2	176,219	22,303	25,074
GROWING STOCK										
Thousand cubic meters										
Public	460	19	46	380	197	85	(²)	1,187	98	108
Private	1,501	51	141	1,137	677	296	(²)	3,803	533	602
Total	1,961	70	187	1,517	874	381	(²)	4,990	631	710
SAWTIMBER										
Thousand board feet, International 1/4-inch rule										
Public	69,041	2,980	8,035	44,941	16,318	12,268	1	153,584	481	1,286
Private	223,407	8,103	24,160	133,495	56,886	42,424	5	488,480	2,612	9,078
Total	292,448	11,083	32,195	178,436	73,204	54,692	6	642,064	3,093	10,364
										13,457
										655,521

¹Less than 0.5 thousand cubic feet.

²Less than 0.5 thousand cubic meters.

Table 18.--Net volume of timber on commercial timberland in the Bear River and Wasatch Front Working Circles by class of timber, and softwoods and hardwoods, 1977

Class of timber	Softwoods	Hardwoods	All classes
Sawtimber trees:			
----- Thousand cubic feet -----			
Saw-log portion	138,963	4,142	143,105
Upper-stem portion	7,734	735	8,469
Total	146,697	4,877	151,574
Poletimber trees	29,522	20,197	49,719
All growing stock trees	176,219	25,074	201,293
Sound cull trees	3,873	250	4,123
Rotten cull trees	507	932	1,439
Salvable dead trees	5,087	3,647	8,734
All timber	185,686	29,903	215,589

Table 19.--Net volume of growing stock on commercial timberland in the Bear River and Wasatch Front Working Circles by forest type and species, 1977

Forest type	Species									
	Douglas-fir	Lodgepole pine	limber pine	Subalpine fir	White fir	Engelmann spruce	Pinyon juniper	Aspen softwoods	Cottonwood	All species Total
----- Thousand cubic feet -----										
Douglas-fir	51,561	--	--	933	7,090	--	--	59,584	1,129	1,129
Fir-spruce	14,556	--	6,600	48,595	17,915	13,232	--	100,898	3,344	3,344
Lodgepole pine	--	2,476	--	--	--	--	--	2,476	333	333
Aspen	3,136	--	--	4,060	5,838	225	2	13,261	17,748	17,748
Cottonwood	--	--	--	--	--	--	--	--	2,520	2,520
All types	69,253	2,476	6,600	53,588	30,843	13,457	2	176,219	22,303	25,074
----- Thousand cubic meters -----										
All types	1,961	70	187	1,517	874	381	(¹)	4,990	631	710

¹Less than 0.5 thousand cubic meters.

Table 20.--Net volume of sawtimber on commercial timberland in the Bear River and Wasatch Front Working Circles by forest type and species, 1977

Forest type	Species									
	Douglas-fir:	Lodgepole:	Limber:	Subalpine:	White fir:	Engelmann:	Pinyon/	Total	Aspen	Cottonwood:
	pine	pine	pine	fir	fir	spruce	juniper	softwoods:	hardwoods:	Total
Thousand board feet, International 1/4-inch rule										
Douglas-fir	208,521	--	--	2,409	12,717	--	--	223,647	442	442
Fir-spruce	70,087	--	32,195	163,846	49,648	53,689	--	369,465	199	1,390
Lodgepole pine	--	11,083	--	--	--	--	--	11,083	--	--
Aspen	13,840	--	--	12,181	10,839	1,003	6	37,869	2,452	2,452
Cottonwood	--	--	--	--	--	--	--	--	9,173	9,173
All types	292,448	11,083	32,195	178,436	73,204	54,692	6	642,064	3,093	13,457
										655,521

Table 21.--Net annual growth of growing stock and sawtimber on commercial timberland in the Bear River and Wasatch Front Working Circles by ownership class and species, 1977

Ownership class	Species									
	Douglas-fir:	Lodgepole:	Limber:	Subalpine:	White fir:	Engelmann:	Total	Aspen	Cottonwood:	Total
	pine	pine	pine	fir	fir	spruce	softwoods:	hardwoods:	hardwoods:	hardwoods:
Cubic feet										
GROWING STOCK										
Public	309,712	19,524	21,740	224,830	35,348	66,614	677,768	199,683	11,101	210,784
Private	988,902	53,090	73,280	687,773	96,910	226,113	2,126,068	976,520	84,575	1,061,095
Total	1,298,614	72,614	95,020	912,603	132,258	292,727	2,803,836	1,176,203	95,676	1,271,879
										4,075,715
GROWING STOCK										
Cubic meters										
Public	8,770	553	616	6,366	1,001	1,886	19,192	5,654	315	5,969
Private	28,003	1,503	2,075	19,476	2,744	6,403	60,204	27,652	2,394	30,046
Total	36,773	2,056	2,691	25,842	3,745	8,289	79,396	33,306	2,709	36,015
										115,411
SAWTIMBER										
Board feet, International 1/4-inch rule										
Public	1,647,450	85,782	113,207	841,969	349,086	275,762	3,313,256	26,434	31,716	58,150
Private	5,035,950	233,255	377,256	2,330,337	1,051,815	935,543	9,964,156	137,894	230,888	368,782
Total	6,683,400	319,037	490,463	3,172,306	1,400,901	1,211,305	13,277,412	164,328	262,604	426,932
										13,704,344

Table 22.--Annual mortality of growing stock and sawtimber on commercial timberland in the Bear River and Wasatch Front Working Circles by ownership class, and softwoods and hardwoods, 1977

Species group and ownership class	Growing stock	Sawtimber
- Cubic feet -	- Cubic meters -	- Board feet ¹ -
Softwoods:		
Public	277,877	7,869
Private	1,005,638	28,476
Total	1,283,515	36,345
Hardwoods:		
Public	37,419	1,060
Private	219,236	6,208
Total	256,655	7,268

¹International 1/4-inch rule.

Table 23.--Annual mortality of growing stock and sawtimber on commercial timberland in the Bear River and Wasatch Front Working Circles by cause of death and species, 1977

Cause of death	Species					All species
	Douglas-fir	Subalpine fir	White fir	Total softwoods	Aspen	
GROWING STOCK						
			Cubic feet			
Insects	--	260,124	168,555	428,679	--	428,679
Disease	--	--	--	--	103,342	103,342
Fire	140,634	--	--	140,634	--	140,634
Weather	8,099	--	57,667	65,766	--	65,766
Suppression	--	--	113,881	113,881	--	113,881
Unknown	112,968	348,085	73,502	534,555	153,313	687,868
Total	261,701	608,209	413,605	1,283,515	256,655	1,540,170
GROWING STOCK						
			Cubic meters			
Insects	--	7,366	4,773	12,139	--	12,139
Disease	--	--	--	--	2,926	2,926
Fire	3,982	--	--	3,982	--	3,982
Weather	229	--	1,633	1,862	--	1,862
Suppression	--	--	3,225	3,225	--	3,225
Unknown	3,199	9,857	2,081	15,137	4,342	19,479
Total	7,410	17,223	11,712	36,345	7,268	43,613
SAWTIMBER						
			Board feet, International 1/4-inch rule			
Insects	--	1,125,688	739,230	1,864,918	--	1,864,918
Disease	--	--	--	--	28,492	28,492
Fire	628,582	--	--	628,582	--	628,582
Weather	--	--	158,826	158,826	--	158,826
Suppression	--	--	152,895	152,895	--	152,895
Unknown	509,486	905,756	324,037	1,739,279	27,853	1,767,132
Total	1,138,068	2,031,444	1,374,988	4,544,500	56,345	4,600,845

Felt, Dorothy G.

1980. Forest area and timber resource statistics for the Bear River and Wasatch Front Working Circles, Utah, 1976-1977. USDA For. Serv. Resour. Bull. INT-22, 25 p. Intermt. For. and Ranger Exp. Stn., Ogden, Utah 84401.

Presents land area, commercial timberland area, timber inventory, and growth and mortality data based on Resources Evaluation standards.

KEYWORDS: forest surveys (regional), forest area classification, stand volume

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The Intermountain Station, headquartered in Ogden, Utah, is one of eight regional experiment stations charged with providing scientific knowledge to help resource managers meet human needs and protect forest and range ecosystems.

The Intermountain Station includes the States of Montana, Idaho, Utah, Nevada, and western Wyoming. About 231 million acres, or 85 percent, of the land area in the Station territory are classified as forest and rangeland. These lands include grasslands, deserts, shrublands, alpine areas, and well-stocked forests. They supply fiber for forest industries; minerals for energy and industrial development; and water for domestic and industrial consumption. They also provide recreation opportunities for millions of visitors each year.

Field programs and research work units of the Station are maintained in:

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Bozeman, Montana (in cooperation with Montana State University)

Logan, Utah (in cooperation with Utah State University)

Missoula, Montana (in cooperation with the University of Montana)

Moscow, Idaho (in cooperation with the University of Idaho)

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